

REMARKS

Claims 33, 37-40 and 42-44 are pending in the present application and are rejected.
Claims 33, 39, 40 and 44 are herein amended. No new matter has been added.

Applicants' Response to Claim Rejections under 35 U.S.C. §102

Claims 33, 36, 37, 39-42 and 44 are rejected under 35 U.S.C. §102(b) as being anticipated by Tanaami (US Patent Application Publication No. 2001/0001581).

It is the position of the Office Action that Tanaami discloses the embodiments as claimed. Tanaami is directed at a confocal scanner. As illustrated in Figure 1, the scanner includes a laser 1 as a light source, microlens disk 2, a beam splitter 3, a pinhole disk 4, and objective lens 5, a relay lens 7 and a detector 8.

The Office Action maintains that beam splitter 3 is a “separating means” as claimed. It appears that Figure 1 is a conventional confocal scanner. Tanaami discloses that the beam splitter 3 “is a light branching device” in paragraph [0004], but provides few additional comments. Tanaami does not explicitly state that the beam splitter separates the light as “spectroscopic information.”

In response, Applicants herein amend the claims to clarify the claimed embodiments. In particular, Applicants now recite a dichroic mirror, *in addition to* a “separating means.” This is supported by the specification in general, but is illustrated by Figure 6, for example. Figure 6 discloses both a dichroic mirror 103 *and* a grating G, which is an example of a “separating means.”

The light reflected from the sample (biochip) of Tanaami includes both excitation light and fluorescent light. The beam splitter 3 of Tanaami removes excitation light, leaving fluorescent light only. As such, the beam splitter 3 of Tanaami corresponds to the dichroic mirror 103 in Fig. 6 of the present specification, which reflects excitation light and allows fluorescent light to pass therethrough.

Accordingly, light emitted from the light source 101 is reflected by the dichroic mirror 103 and irradiated on the sample S. Although the fluorescent light emitted from the sample S and the excitation light reflected by the sample S fall on the dichroic mirror 103, the excitation light is reflected by the dichroic mirror 103, such that only the fluorescent light passes through the dichroic mirror 103. As such, in the microscopic optical system, the excitation light is irradiated on the sample S to pick out fluorescent light (signal light) alone. Therefore, only the fluorescent light passing through the dichroic mirror 103 falls on the separating means (i.e., grating G, a plurality of dichroic mirrors 31, 32, 33 and Fourier spectrometer 81) and developed as spectroscopic information. The plurality of dichroic mirrors 31, 32 and 33 used in the embodiment shown in Fig. 12 of the present specification each have a different wavelength characteristic (transmission wavelength) and are arranged in different angles to reflect plural wavelength components in different directions, thereby achieving a spectroscopic operation in the same manner as gratings.

On the other hand, Tanaami only discloses a beam splitter 3. Tanaami does not additionally disclose or suggest a separating means in addition to a dichroic mirror. Therefore,

Tanaami cannot disclose or suggest the embodiments as claimed. Favorable reconsideration is respectfully requested.

Claims 33 and 36-44 are rejected under 35 U.S.C. §102(e) as being anticipated by Dietz et al. (U.S. Patent No. 6,603,537).

It is the position of the Office Action that Dietz discloses the embodiments as claimed. Dietz is directed at optical architectures for microvolume laser-scanning cytometers. As illustrated in Figure 2, the device includes a laser 50, an excitation dichroic filter 58, and objective lens 64, an emission dichroic filter 72 and two CCDs 74 and 76.

Dietz observes spectroscopic information on each measuring point while scanning all the spots of the samples. Dietz does not observe images on the entire surface of the biochip at a time as in the claimed embodiments. Accordingly, Dietz does not disclose or suggest that spectroscopic information is developed between images of samples.

On the other hand, in the claimed embodiments, as shown in Fig. 7 and Fig. 8, that the images of all the spots (S1 to S4) of the samples formed on the surface of the biochip and images of spectroscopic information (λ_1 to λ_4) thereof are formed on an acceptance surface of the detector 109 as one image. The detector 109 fetches the images at a time, as described in the paragraph beginning on page 12, line 18.

If the images of all the spots (S1 to S4) of the samples and images of spectroscopic information (λ_1 to λ_4) thereof are to be formed on the acceptance surface of the detector 109 at a time as set forth above, high speed equipment is not needed so as to fetch images of all the spots,

and information of all the spots can be fetched at the same time with ease even by use of a relatively low speed equipment. This becomes possible by developing the spectroscopic information between the spots of the samples.

Dietz discloses an excitation dichroic filter 72 and an emission dichroic filter 58. Even if, *arguendo*, the excitation dichroic filter 58 is regarded as a dichroic mirror as claimed, the emission dichroic filter 72 cannot be regarded as a “separating means” as claimed. This is at least because the emission dichroic filter 72 cannot separate spectroscopic information in the manner that a grating, a plurality of dichroic mirrors having different wavelength characteristics, and a Fourier spectrometer can separate spectroscopic information. Therefore, for at least the above reasons, Applicants respectfully submit that Dietz does not disclose or suggest the embodiments as claimed. Favorable reconsideration is respectfully requested.

Claims 33, 36, 39, 40, 41, and 44 are rejected under 35 U.S.C. 102(e) as being anticipated by Li (U.S. Patent Application Publication No. 2003/0223059).

It is the position of the Office Action that Li disclose the embodiments as claimed. Li is directed at a multi-wavelength array reader for biological assay. As illustrated in Figure 5, the reader includes a laser 20 as a light source, an array of sites, a transmission grating beam splitter 38, and a CCD camera 39.

It is the position of the Office Action that the transmission grating beam splitter 38 is a separating means as claimed. Li explains that this grating beam splitter can cause light to

diverge and become non-collimated. See paragraph [0063]. The Office Action repeats similar comments for Li as for Dietz and Tanaami.

Li reads spectroscopic information sequentially every row 700 of a plurality of sites arranged two dimensionally on the substrate 704, but it does not read images of all the sites simultaneously on the substrate 704. Accordingly, Li repeats image processing every time images on the sites by one row are fetched, so that it needs equipment capable of implementing fetching images at high speed and arithmetic processing at high speed so as to fetch the images of all the sites on the biochip in a short time. Thus, like Dietz, Li does not disclose or suggest developing spectroscopic information (spectroscopic image) between images of samples.

Li discloses a transmission grating beam splitter 38. Even if, *arguendo*, the transmission grating beam splitter 38 is a “separating means” as claimed, Li cannot disclose or suggest the embodiments as claimed. This is at least because Li does not additionally disclose a dichroic mirror in addition to the “separating means.” Therefore, for at least the above reasons, Applicants respectfully submit that Li does not disclose or suggest the embodiments as claimed. Favorable reconsideration is respectfully requested.

For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

If the Examiner deems that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants’ undersigned attorney.

Application No. 10/769,017
Art Unit: 1773

Amendment
Attorney Docket No. 082726A

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
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